

REMARKS

By the present Amendment, claims 1-9 are cancelled and claims 10-19 are added. This leaves claims 10-19 pending in the application, with claims 10 and 19 being independent.

Substitute Specification

The specification is revised to eliminate grammatical and idiomatic errors in the originally presented specification. The number and nature of the changes made in the specification would render it difficult to consider the case and to arrange the papers for printing or copying. Thus, the substitute specification will facilitate processing of the application. The substitute specification includes no "new matter". Pursuant to M.P.E.P. § 608.01(q), voluntarily filed, substitute specifications under these circumstances should normally be accepted. A marked-up copy of the original specification is appended hereto.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Original claims 1-9 appear to stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. By the present Amendment, the originally filed claims have been rewritten to avoid the language alleged to be indefinite in the Office Action. All language of the presently pending claims is now believed to be clear and definite.

Thus, the pending claims are definite and comply with 35 U.S.C. § 112.

Rejections Under 35 U.S.C. §103

Claim 10 covers a hydraulic accumulator comprising an accumulator housing 10, a separating element 16 and valve block 24 with a ball valve 28. The accumulator housing has a

gas chamber 12 and a fluid chamber 14 therein, a first free-end and a longitudinal axis 34. The separating element is located in the housing, and separates the gas chamber from the fluid chamber. The valve block is directly mounted in and closes the housing first free end and has a fluid path 30 therein extending from the interior of the housing to its exterior. The path has a first part 40 extending from the fluid chamber and parallel to and laterally offset relative to the longitudinal axis. The ball valve is mounted in the valve block and is movable between an open position allowing fluid flow through the fluid path and a closed position blocking fluid flow through the fluid path. A fluid passage in the ball valve extends perpendicular to the longitudinal axis in the open position, and has a blocking part 38 with a pivot axis 36 laterally offset and parallel to the longitudinal axis. The blocking part is diametrically opposite the longitudinal axis.

By forming the hydraulic accumulator in this manner, a simple structure is provided facilitating manufacture and operation. Additionally, the structure is compact minimizing the space necessary for the hydraulic accumulator. The specific placement and orientation of the ball valve, the ball valve pivot axis and the ball valve blocking part relative to the hydraulic accumulator housing longitudinal axis provides the simple and compact accumulator structure.

Claims 1-9 stand rejected under 35 U.S.C. §103 as being unpatentable over WO 02/40871 to Weber in view of U.S. Patent No. 3,933,172 to Allen. The Weber International application is cited for a hydraulic accumulator having a housing 10, a piston 16 separating a gas chamber 12 from a fluid chamber 14 and a valve block 24 having a smaller end inserted into the housing to close a housing. The passageway 40 allegedly extends into the housing through the valve block offset from its central axis where valves can extend across the longitudinal axis. Part of the fluid carrying path is allegedly screwed into the valve block. The connection and sealing

of the valve block to the housing is considered to involve the use of known mechanical expedients. The Allen patent is cited for the use of a ball valve with a handle to control flow into an accumulator. In support of the rejection, it is alleged that it would obvious to use the Allen ball valve in the Weber accumulator. The orientation of the valve and the handle are considered obvious matters of choice.

Claims 1, 4 and 9 stand rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 2,979,070 to Payne in view of the Allen patent. The Payne patent is cited for an accumulator with a housing 7, a piston 11 separating a gas chamber 40 from a fluid chamber 41 and a valve block 21 having a smaller end inserted into and closing the housing. A passageway allegedly extends into the housing through the valve block. The connection sealing the valve block is alleged to be an obvious matter of choice. The Payne patent is again cited for the use of a ball valve with a handle.

Claims 1-9 are also rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 6,619,325 to Gray in view of the Weber International application. The Gray patent is cited for a hydraulic accumulator having a housing 14, a separating element 15 separating a gas chamber from a fluid chamber, and a valve block 122 with a smaller end inserted into the housing to close and seal it. The valve is allegedly a ball valve 29 with the handle control being an alleged obvious embodiment requiring only routine skill. The Weber International application is cited for an accumulator having a piston as a separating element and offsetting the passageway from the longitudinal axis. In support of the rejection, it is alleged that it would obvious to use a piston separator and to offset the passageway as allegedly suggested by the Weber application in the Gray accumulator.

None of the patents cited and applied against the original claims of this application disclose or render obvious this particular orientation of the ball valve in the accumulator. The positioning and orientation of the valve in the accumulator is not "an obvious choice of mechanical expedients" resulting from routine experimentation by one of ordinary skill in the art, as alleged.

The Weber patent discloses an accumulator having a housing 10 with a valve block 24. An on-off valve 28 is located in the valve block to control the flow of fluid between fluid chamber 14 and the exterior through fluid channel 40 and transverse connection 42. Valve 28 is axially arranged parallel to longitudinal axis 38 and is designed as magnet valves 48 actuated by electrical connections 50. Although the Weber discloses arranging the valves in other orientations, there is no teaching that the valve should be pivoted, be a ball valve or be susceptible to manual actuation, since no such allegation is contained within the statement of the rejection.

The Allen patent, cited relative for the use of a ball valve, discloses a pipeline surge reliever with sanitary barrier having an accumulator 42 with a liquid or fluid chamber 46 coupled by a pilot load line 48 to an orifice device 50. The orifice device 50 is disclosed as a variable orifice, ball or plug valve 52 with a manual positioning device 54. The purpose of the Allen system by its arrangement with the pipeline 48 is to isolate that accumulator structure from the possibly corrosive pipeline fluid.

Not only does the Allen patent fail to disclose a ball valve mounted in a valve block directly coupled to the accumulator housing, as claimed, it in fact teaches a way from such connection in view of its intent to isolate the accumulator elastomer components from the

corrosive pipeline fluid. Additionally, the Allen patent does not specifically teach the claimed orientation of the ball valve and its blocking part, particularly relative to a blocking part with a pivot axis laterally offset and parallel to the accumulator longitudinal axis and relative to the blocking part being diametrically opposite the longitudinal axis, as recited in claim 10. Since the Allen patent does not disclose those features, it cannot render those features obvious to one of ordinary skill in the art.

The different arrangements and purposes of the Weber and Allen patents teach away from one another so that it would not have been obvious to one of ordinary skill in the art to combine them in manner proposed in the rejection. The rejection involves an improper hindsight reconstruction of the prior art in view of the applicant's disclosure.

The claimed orientation of the ball valve provides significant advantages as to the simplicity of the design and the compact nature of the structure resulting therefrom. Thus, such orientation, as claimed, does not constitute a mere obvious choice of mechanical expedients requiring only routine experimentation to arrive at optimum choices, as alleged.

Accordingly, claim 10 is patentably distinguishable over the proposed combination of the Weber International application and the Allen patent.

The rejection of the claims over the Payne and Allen patents has not been raised against original claims 2 and 3. Since new claim 10 combines the limitations of original claims 1-3, the combination of the Payne and Allen patents is not viewed as being applicable to claim 10. Valve 35 for controlling the flow of the fluid from the fluid reservoir 8 of the Payne accumulator is separated from the accumulator housing by a fitting 30. Thus, the Payne patent does not disclose or suggest the ball valve orientation recited in claim 10. For the same reasons advanced above

relative to the combination of the Weber International application and the Allen patent, the Allen patent does not supply or render obvious these deficiencies in the Payne patent.

The Gray patent, particularly relative to the embodiment disclosed in Fig. 6 thereof, discloses an accumulator having a ball valve 121 attached to an anti-extrusion valve assembly 122 with a flow-fuse calibrated spring 123, pop-up valve 124 and positive seal 126. Valve 121 operates as a shut-off valve, and is operated hydraulically by control valve 127 via the pressure supplied to ball valve actuator 130 for rotating ball shaft 131. The ball shaft is rotated against the biasing force of torsion spring 132 that biases the valve towards a closed position thereof. The Gray patent only discloses the ball valve in the orientation illustrated in Fig. 6, with the rotational axis for the ball valve being perpendicular to the accumulator longitudinal axis and with the valve passage extending co-axially to the longitudinal axis of the accumulator in its open position. In this manner, the Payne patent does not disclose or suggest a ball valve having a fluid passage extending perpendicular to the accumulator housing longitudinal axis in its open position and does not have a blocking part with a pivot axis laterally offset and parallel to the accumulator longitudinal axis with the blocking part being diametrically opposite the longitudinal axis. Further, it does not have a valve block with a passage from the fluid chamber parallel to and laterally offset relative to the longitudinal axis, as recited in claim 10. These substantial and significant differences between the Payne patent and the claimed structure are not taught by the Weber International application or otherwise properly considered obvious.

As noted above, the Weber International application does not disclose a ball valve, particularly with the structure and orientation relative to the accumulator recited in claim 10. Thus, the Weber patent cannot supply or render obvious these recited features of claim 10. No

evidence supports the allegation that the orientation of the valve involves a mere choice of mechanical expedients to be determined through routine experimentation by one of ordinary skill in the art. Without such evidence, the Office Action fails to present a *prima facie* case of obviousness relative to the subject matter of claim 10. The particular orientation of the claimed ball valve is significant in achieving the objects of the present invention of the simplicity and compactness of the structure.

Accordingly, claim 10 is patentably distinguishable over the Gray patent and the Weber International application.

Claims 11-16 being dependent upon claim 10, are also allowable for the above reasons. Moreover, these dependent claims recite additional features further distinguishing them over the cited patents.

Claim 11 is further distinguished by the piston of claim 10. The Allen and Gray patents are limited to diaphragm-type accumulators.

Claims 12 is further distinguished by the second part of the fluid path extending transversely to the longitudinal axis with its screwed part being threaded into the valve part outer circumferential side. While features relative to the second part apparently are alleged to be disclosed in the Weber International application, such features are not provided in combination with the ball valve orientation discussed above.

Claim 13 further distinguishes a valve block being between a manual handle and the accumulator housing. The only citation having a manual handle is the Allen patent and such handle 54 is separated from the accumulator housing by pilot load line 48 so as not to meet this claim limitation.

Claim 14 is further distinguished by the orientation of the actuating knob being in a direction opposite of fluid path through the screwed part in the open position of the ball valve. As noted above, neither the Allen patent nor the Gray patent, the sole patents relied upon relative to the use of a ball valve, discloses this specific orientation. Moreover, nothing in the record supports that varying orientations in this manner is an obvious or a known result effective variable.

Claim 15 is further distinguished by the valve block cylindrical extension, particularly within the overall claimed combination.

Claim 16 is further distinguished by the seal, particularly within the overall claimed combination.

Claim 17 is further distinguished by the fluid path second part being transverse to the housing longitudinal axis and the ball valve being adjacent the junction of the first and second fluid parts. Such structure is not disclosed or rendered obvious by the cited documents.

Claim 18 is further distinguished by the ball valve being in the fluid path second part. No citation discloses or renders obvious this feature.

Claim 19 is further distinguished by the suspension system with the hydraulic accumulator of claim 10, in combination with a suspension accumulator. None of the other cited patents disclose or render obvious this specific combination.

In view of the foregoing, claims 10-19 are allowable. Prompt and favorable action is solicited.

Respectfully submitted,



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